



RESEARCH PROGRESS REPORT SUMMARY

Grant 02686-A: Pattern of Thyroid Function Tests during Recovery from Acute Nonthyroidal Illness

Principal Investigator: Timothy Bolton, DVM

Research Institution: Virginia-Maryland Regional College of Veterinary Medicine

Grant Amount: \$13,792.00

Start Date: 1/1/2020 **End Date:** 6/30/2023

Progress Report: End-Year 3

Report Due: 12/31/2022 **Report Received:** 1/3/2023

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Original Project Description:

Hypothyroidism is the most common endocrine disease in dogs. A diagnosis of hypothyroidism relies on finding both appropriate clinical signs and low thyroid hormone levels. Unfortunately, other illnesses can suppress thyroid hormone levels and result in a misdiagnosis. This phenomenon of low thyroid hormone levels caused by a disease not involving the thyroid gland is known as nonthyroidal illness or euthyroid sick syndrome. It is important to distinguish between nonthyroidal illness and hypothyroidism as the treatment for each is different. Historically, the recommendation for a dog with nonthyroidal illness has been to resolve the underlying disease, followed by a recheck of thyroid hormone levels thereafter. However, the duration of time after resolution of the nonthyroidal illness necessary to perform accurate thyroid hormone level testing is unknown. This study will provide information about thyroid hormone levels during the course of nonthyroidal illness, and also establish the approximate duration of time for recovery of thyroid hormone levels to normal following illness resolution. These results will correlate clinically with more concrete recommendations for thyroid hormone level testing following resolution of nonthyroidal illness.

Publications:

A manuscript delineating the findings of this study is under review by the Journal of Veterinary Internal Medicine.

Presentations:

None at this time.



Report to Grant Sponsor from Investigator:

In totality, 103 cases were screened for possible study enrollment. Forty-one cases were enrolled, with 16 of them excluded for various reasons, failure to return for follow-up, chronic disease diagnosis, owner withdrawal, and a thyroid disease diagnosis. This left 25 dogs having completed the study (100% of the cases needed).

An enunciation of the relationship between thyroid hormones and thyroid stimulating hormone during acute nonthyroidal illness and recovery will be postponed until after the statistical analysis is complete (see objective #1 above).

Total T4 is the most common hormone measured in dogs suspected of hypothyroidism and is low in cases of this disease. It can also decrease in dogs with nonthyroidal illness, frequently resulting in an inappropriate diagnosis of hypothyroidism and unnecessary thyroid hormone supplementation. The results of this study have demonstrated that total T4 normalization occurs in 80% of cases by hospital discharge and 96% of cases by the 2-week follow-up. Thus, in dogs diagnosed with acute nonthyroidal illness having a low total T4, rechecking this hormone 2 weeks following nonthyroidal illness resolution is likely to result in an accurate assessment of thyroid hormone status for the patient (i.e., normal total T4).